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Practice

Form K

Multiplying and Dividing Rational Expressions

Multiply.

1. $\frac{5n^2}{3n^2} \cdot \frac{3}{n} \frac{5}{n}$

2. $\frac{t}{t-3} \cdot \frac{t+1}{t+2} \frac{t(t+1)}{(t-3)(t+2)}$

3. $\frac{3a-9}{3a-6} \cdot \frac{a}{a^2-9} \frac{a}{(a+3)(a-2)}$

4. $\frac{18q-36}{2q} \cdot \frac{4q^2}{54q-18} \frac{2q(q-2)}{(3q-1)}$

5. $\frac{m^2-m-20}{m^2-4m} \cdot \frac{2m^2}{m^2-25} \frac{2m(m+4)}{(m-4)(m+5)}$

6. $\frac{8v}{6v^2+22v-8} \cdot \frac{3v-1}{4v^2} \frac{1}{v(v+4)}$

7. $\frac{z^2}{z^2+5z-6} \cdot \frac{2z^2-7z+5}{6z^2-15z} \frac{z}{3(z+6)}$

8. $(3x^2+7x+4) \cdot \frac{x^2-4x}{9x^3-16x} \frac{(x+1)(x-4)}{3x-4}$

9. Which of the following is the reciprocal of $x^2 - 2x - 63$? a

a. $\frac{1}{(x+7)(x-9)}$

b. $(x+7)(x-9)$

c. $\frac{1}{x-9}$

Find the reciprocal of each expression.

10. $x^2 - 2x - 15 \frac{1}{(x-5)(x+3)}$

11. $\frac{6p^2}{7p^2-12} \frac{7p^2-12}{6p^2}$

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Practice (continued)

Form K

Multiplying and Dividing Rational Expressions

Divide.

12. $\frac{6f-6}{3f-8} \div \frac{6f-6}{f+9} \frac{f+9}{3f-8}$

13. $\frac{12m-20}{27m} \div \frac{3m-5}{9m} \frac{4}{3}$

14. $\frac{18c-27}{9t^2-16} \div \frac{2c-3}{3t+4} \frac{9}{3t-4}$

15. $\frac{2x^2-23x+56}{10x+6} \div \frac{x-8}{5x+3} \frac{2x-7}{2}$

Simplify each complex fraction.

16. $\frac{\frac{1}{x-3}}{\frac{3}{x-3}} \frac{1}{3}$

17. $\frac{\frac{m}{n}+2}{\frac{m}{n}+5} \frac{m+2n}{m+5n}$

18. A shipping box has a base area of
- $4x^2 + 52x + 168$
- and a height of
- $\frac{x}{4x+28}$
- .
-
- What is the volume of the box?

$x(x+6)$

19. Karl drives for
- $(x^2 - 100)$
- hours at a rate of
- $\frac{1}{5x-50}$
- miles per hour. How far does Karl drive?

$\frac{x+10}{5}$ miles

- 20.
- Open-Ended**
- Write two rational expressions whose product is 1.

Answers may vary. Sample: $\frac{1}{x+3}$ and $\frac{x+3}{1}$